

WHAT IS CLAIMED IS:

1. An optical device package which comprises:

5 a) a substrate having an upper surface and a longitudinal notch extending from a proximal end of the substrate to a lateral groove which is at least partially defined by a proximal facing stop surface;

b) an optical fiber positioned within the longitudinal notch; and,

100 c) a frame mounted to the upper surface of the substrate, the frame having at least one downwardly extending projection engaged in at least one lateral end portion of the lateral groove.

15 2. The optical device package of Claim 1 further comprising an optical semiconductor component mounted to the upper surface of the substrate distal of the lateral groove, the optical semiconductor component being operatively aligned with the optical fiber.

20 3. The optical device package of claim 1 wherein the downwardly extending projection has a rectangular shape.

4. The optical device package of claim 1 wherein the optical fiber has a distal end abutting the proximal facing stop surface of the substrate

5 5. The optical device package of Claim 2 further comprising a lid mounted to the frame so as to define an inner space wherein the optical semiconductor component and at least a portion of the optical fiber are enclosed.

10 6. The optical device package of Claim 1 wherein the frame comprises a single piece member defining an opening, and having at least two downward pointing projections engaged respectively in opposite lateral end portions of the lateral groove.

15 7. The optical device package of Claim 6 wherein the frame further includes a recess for engaging an upper portion of the optical fiber.

8. The optical device package of Claim 1 wherein the frame includes internal electrical connections.

9. The optical device package of Claim 8 wherein the frame is fabricated from ceramic.

10. The optical device package of Claim 9 further including an electronic component.

5 11. The optical device package of Claim 1 wherein the frame possesses a quadrilateral shape.

12. The optical device package of Claim 1 wherein the substrate is fabricated from single crystal silicon.

10 13. The optical device package of Claim 1 wherein the optical semiconductor component is selected from the group consisting of a laser diode, light emitting diode and photodetector.

15 14. The optical device package of claim 1 further comprising a ferrule disposed between the frame and the substrate, wherein the optical fiber is disposed through a bore in the ferrule.

15. An optical device package which comprises:

a) a substrate having an upper surface and a longitudinal notch extending from a proximal end of the substrate to a lateral groove which is at least partially defined by a proximal facing stop surface;

b) an optical fiber positioned within the longitudinal notch; and,

c) a frame mounted to the upper surface of the substrate, the frame having a recess for engaging an upper surface of the optical fiber and at least one downwardly extending projection engaged in at least one lateral end portion of the lateral groove.

16. A method for making an optical device package comprising:

a) mounting an optical fiber in a longitudinal notch in an upper surface of a substrate such that a distal end of the fiber abuts a proximally facing stop surface which at least partially defines a laterally extending groove;

b) forming at least one electrical lead on the upper surface of the substrate;

c) mounting an optical semiconductor component to the upper surface of the substrate distal to the lateral groove such that the optical semiconductor component is in contact with the at least one electrical lead and is operatively aligned with the optical fiber;

d) fixedly mounting a frame to the upper surface of the substrate, the frame having at least one downwardly extending projection configured and dimensioned to engage a lateral end portion of the laterally extending groove; and

e) fixedly mounting a lid to the frame.

17. The method of Claim 16 wherein the substrate is single crystal silicon and the upper surface is in the (100) crystallographic plane.

18. The method of Claim 17 wherein the longitudinal notch of the substrate is formed by masking the substrate and etching the substrate in the (111) crystallographic planes.

19. The method of Claim 16 wherein the frame is fabricated by providing a plurality of green sheets of

ceramic precursor, forming the green sheets, stacking the green sheets, and sintering the green sheets to form a solid ceramic structure.

5           20. The method of Claim 19 further including the step of applying a conductive paste to one or more green sheets prior to stacking and sintering the green sheets.

10           21. The method of Claim 16 wherein the step of fixedly mounting the frame is performed by bonding the frame to the substrate with a material selected from the groups consisting of solder metal, solder glass frit, BCB and epoxy resin.

15           22. The method of Claim 16 wherein the frame has two downwardly extending projections configured and dimensioned to engage respective opposite lateral end portions of the laterally extending groove.